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Y-12 WORKER MORTALITY STUDY BY THE UNIVERSITY OF NORTH CAROLINA

Researchers from the Department of Epidemiology at the University of North Carolina's School of Public Health recently published a mortality study of workers at the Y-12 Plant in Oak Ridge, Tennessee. Funding for this study was awarded by the Centers for Disease Control and Prevention under an existing Memorandum of Understanding with the U.S. Department of Energy. This study updates a previous mortality study published in 1988.

Workers at the nuclear production site in Oak Ridge, Tennessee, known as the Y-12 Plant, were included in this study if they had worked there for at least 30 days between 1943 and 1974. Researchers obtained death certificates for those workers who had died before 1991 and reviewed the cause-of-death information listed on each death certificate. Causes of death for the Y-12 workers were then compared with the overall U.S. population.

The main analysis of this study included 8,116 workers who were employed at Y-12 between 1947 and 1974, of which 1,861 were known to be dead by the end of 1990. Of these 8,116 workers, 6,591 were white males, 1,073 were females, and 452 were nonwhite males. The causes of death and rates of death for each of these groups were analyzed separately. The authors noted that the mortality of female and nonwhite male Y-12 workers were analyzed for the first time in this study. Additional analyses were done, looking specifically at 2,481 workers employed at the site from 1943 to 1946, a time period when workers were involved in the production of enriched uranium for atomic weapons.

Among white male Y-12 workers, researchers reported that the overall rate of death was lower than all U.S. white males. The rate of death from noncancer causes among these workers, and for total cancers, was similar to that of all U.S. white males. When looking at deaths from various types of cancers, the white male Y-12 workers had a statistically significant increased death rate from lung cancer (+20%) compared to the U.S. white male population. This result was similar to the 1988 study. In addition, although not statistically significant, white male Y-12 workers also had increased rates of cancer of the pancreas, prostate, kidney, brain, and other lymphatic tissue compared to the U.S. white male population.

In the analyses of female and nonwhite male workers at Y-12, each showed lower overall rates of death and lower death rates from all types of cancer combined, compared to the female U.S. population and nonwhite male U.S. population, respectively. However, the researchers considered noteworthy the 21% higher death rate of breast cancer in female Y-12 workers compared to the U.S. female population. This result, based on 11 deaths over 40-plus years, was not statistically significant. Also, the nonwhite (mostly African American) male Y-12 workers experienced a higher death rate of digestive tract cancer than the U.S. nonwhite male population. This result, based on 7 deaths, was not statistically significant. The researchers also reported that the addition of workers employed before 1947, to the larger group employed from 1947 to 1974, "...did not materially change the results for any cause of death."

The authors concluded that the surveillance of Y-12 workers for deaths from lung cancer, and other cancers with elevated rates, should be continued with attention given to exposures to radiation, beryllium, solvents, and other agents. The researchers interpreted the increase in lung cancer deaths as being work-related. They based this on an examination of all study data, including results for dates of hire, length of employment, and years during which death occurred. The highest rates of death from lung cancer appeared in those workers hired between 1947 and 1954, employed at Y-12 from 5 to 19 years, and dying between 1975 and 1979. In addition, the authors found no excess deaths from other lung conditions often associated with cigarette smoking.

The article entitled "Mortality of Workers at a Nuclear Materials Production Plant at Oak Ridge, Tennessee, 1947-1990," by Dana P. Loomis and Susanne H. Wolf, was published in the American Journal of Industrial Medicine 29:1996, pages 131-141. A copy of the article is available through the DOE public reading rooms or through the Office of Epidemiologic Studies (EH-62) at 301-903-3721. The 1988 study entitled "Radiation Doses and Cause-Specific Mortality Among Workers at a Nuclear Materials Fabrication Plant," by Harvey Checkoway, et al., was published in the American Journal of Epidemiology 127:1988, pages 255-266.

This Health Bulletin is one in a series of routine publications issued by the Office of Health to share data from health studies throughout the DOE complex. The authors' conclusions do not necessarily reflect those of the Department. For more information contact: Office of Epidemiologic Studies, U.S. Department of Energy, Germantown, MD 20874-1290; Telephone (301) 903-3721.